

**WHAT IS CLAIMED IS:**

1. A circuit component built-in module comprising:
  - an insulating substrate formed of a mixture comprising 70wt% to
  - 5 95wt% of an inorganic filler and a thermosetting resin;
  - a plurality of wiring patterns formed on at least a principal plane of the insulating substrate;
  - a circuit component arranged in an internal portion of the insulating substrate and electrically connected to the wiring patterns; and
  - 10 an inner via formed in the insulating substrate for electrically connecting the plurality of wiring patterns.
2. A circuit component built-in module according to claim 1, wherein the circuit component includes an active component, and the inner via is formed of
- 15 a conductive resin composition.
3. A circuit component built-in module according to claim 1, wherein the wiring patterns are further formed in an internal portion of the insulating substrate.
- 20 4. A circuit component built-in module according to claim 1, wherein the circuit component is shielded from external air by the insulating substrate.
5. A circuit component built-in module according to claim 1, wherein the
- 25 thermosetting resin comprises at least one thermosetting resin selected from the group consisting of an epoxy resin, a phenol resin and a cyanate resin.
6. A circuit component built-in module according to claim 1, wherein the inorganic filler comprises at least one inorganic filler selected from the group
- 30 consisting of  $\text{Al}_2\text{O}_3$ ,  $\text{MgO}$ ,  $\text{BN}$ ,  $\text{AlN}$  and  $\text{SiO}_2$ .
7. A circuit component built-in module according to claim 1, wherein an

average particle diameter of the inorganic filler is 0.1 $\mu$ m to 100 $\mu$ m.

8. A circuit component built-in module according to claim 1, wherein the wiring patterns comprise at least one conductive substance selected from the group consisting of copper and a conductive resin composition.

9. A circuit component built-in module according to claim 1, wherein the wiring patterns comprise lead frames formed by etching or stamping.

10. A circuit component built-in module according to claim 1, wherein the circuit component comprises at least one component selected from the group consisting of a chip resistor, a chip capacitor and a chip inductor.

11. A circuit component built-in module according to claim 1, wherein the mixture further comprises at least one additive selected from the group consisting of a dispersant, a coloring agent, a coupling agent and a releasing agent.

12. A circuit component built-in module according to claim 1, wherein the insulating substrate has a coefficient of linear expansion of  $8 \times 10^{-6}/^{\circ}\text{C}$  to  $20 \times 10^{-6}/^{\circ}\text{C}$  and a heat conductivity of 1w/mK to 10w/mK.

13. A circuit component built-in module according to claim 2, wherein the active component comprises a semiconductor bare chip, and the semiconductor bare chip is flip-chip bonded onto the wiring pattern.

14. A circuit component built-in module according to claim 2, wherein the conductive resin composition comprises metal particles of at least one metal selected from the group consisting of gold, silver, copper and nickel as a conductive component, and an epoxy resin as a resin component.

15. A method for producing a circuit component built-in module comprising

the steps of:

processing a mixture comprising 70wt% to 95wt% of an inorganic filler and an uncured thermosetting resin into a first sheet having a through-hole;

5 filling the through-hole with a thermosetting conductive substance so as to form a second sheet having the through-hole filled with the thermosetting conductive substance;

mounting a circuit component on a wiring pattern portion in a first film;

10 positioning and superimposing the second sheet on the side of the first film where the circuit component is mounted, and superimposing a second film having a wiring pattern portion on the second sheet, thereby forming a third sheet in which the circuit component is buried; and

heating the third sheet so as to form a fourth sheet in which the thermosetting resin and the conductive substance are cured.

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16. The method for producing a circuit component built-in module according to claim 15, wherein the circuit component comprises an active component, and the conductive substance comprises a conductive resin composition.

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Sub B2 17. The method for producing a circuit component built-in module according to claim 15, wherein the first and second films are formed of copper foils, and the method further comprises a step of removing the copper foils in a portion other than the wiring pattern portions so as to form wiring patterns, said step of removing the copper foils is after the step of forming the fourth sheet.

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18. The method for producing a circuit component built-in module according to claim 15, wherein the first and second films are formed of release films having wiring patterns formed on one principal plane thereof, and the method further comprises a step of peeling the release films from the fourth sheet, 30 said step of peeling the release films is after the step of forming the fourth sheet.

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~~18.~~ The method for producing a circuit component built-in module according to claim ~~15~~, the method further comprising a step of injecting a sealing resin between the circuit component and the wiring pattern, said step of injecting a sealing resin is after the step of mounting the circuit component on the wiring pattern portion.

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~~20.~~ The method for producing a circuit component built-in module according to claim ~~15~~, wherein the thermosetting resin and the conductive substance are heated at 150 °C to 260 °C for curing.

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~~21.~~ The method for producing a circuit component built-in module according to claim ~~15~~, wherein the thermosetting resin and the conductive substance are pressed at a pressure of 10kg/cm<sup>2</sup> to 200kg/cm<sup>2</sup> while being heated for curing.

15 ~~22.~~ The method for producing a circuit component built-in module according to claim 15, wherein the step of forming the first sheet further comprises a step of heating the sheet mixture at a temperature below a cure temperature of the thermosetting resin, thereby eliminating adhesion of the sheet mixture, said step of heating the sheet mixture is after the step of forming the mixture into the sheet.

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23. The method for producing a circuit component built-in module according to claim 15, wherein the step of forming the third sheet by burying the circuit component in the second sheet is performed at a temperature below a cure temperature of the thermosetting resin.

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~~24.~~ The method for producing a circuit component built-in module according to claim ~~15~~, wherein the step of mounting the circuit component on the wiring pattern comprises a step of electrically and mechanically connecting the circuit component and the wiring pattern with solder.

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~~25.~~ The method for producing a circuit component built-in module according

to claim <sup>2</sup>16, wherein the step of mounting the active component on the wiring pattern comprises a step of electrically connecting a gold bump of the active component and the wiring pattern with a conductive adhesive.

- 5 <sup>12</sup>26. A method for producing a circuit component built-in module having a multilayered structure comprising the steps of:
- processing a mixture comprising 70wt% to 95wt% of an inorganic filler and an uncured thermosetting resin into a first sheet having a through-hole;
  - 10 filling the through-hole with a thermosetting conductive substance so as to form a second sheet having the through-hole filled with the thermosetting conductive substance;
  - forming a wiring pattern on a principal plane of a release film and mounting a circuit component on the wiring pattern;
  - 15 positioning and superimposing the second sheet on the principal plane of the release film, and pressing the second sheet together with the release film provided with the circuit component, thereby forming a third sheet in which the circuit component is buried;
  - peeling the release film from the third sheet so as to form a fourth sheet; and
  - 20 positioning and superimposing a plurality of sheets produced in the same manner as the fourth sheet and a film including a wiring pattern portion, and pressing and heating the plurality of sheets and the film including the wiring pattern portion, thereby forming a fifth sheet having a multilayered structure in which the thermosetting resin and the conductive substance are
  - 25 cured.

<sup>13</sup>27. The method for producing a circuit component built-in module according to claim <sup>12</sup>26, wherein the circuit component comprises an active component, and the conductive substance comprises a conductive resin composition.

30 <sup>24</sup>28. The method for producing a circuit component built-in module according to claim 26, wherein the film including the wiring pattern portion is formed of

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a copper foil, and the method further comprises a step of removing the copper foil in a portion other than the wiring pattern portion so as to form a wiring pattern, said step of removing the copper foil is after the step of forming the fifth sheet.

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29. The method for producing a circuit component built-in module according to claim 26, wherein the film including the wiring pattern portion is formed of a release film having a wiring pattern formed on one principal plane thereof, and the method further comprises a step of peeling the release film from the fifth sheet, said step of peeling the release film is after a step of forming the fifth sheet.

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30. The method for producing a circuit component built-in module according to claim 26, the method further comprising a step of injecting a sealing resin between the circuit component and the wiring pattern, said step of injecting a sealing resin is after the step of mounting the circuit component on the wiring pattern.

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31. The method for producing a circuit component built-in module according to claim 26, wherein the thermosetting resin and the conductive substance are heated at 150 °C to 260 °C for curing.

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32. The method for producing a circuit component built-in module according to claim 26, wherein the thermosetting resin and the conductive substance are pressed at a pressure of 10kg/cm<sup>2</sup> to 200kg/cm<sup>2</sup> while being heated for curing.

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33. The method for producing a circuit component built-in module according to claim 26, wherein the step of forming the first sheet further comprises a step of heating the sheet mixture at a temperature below a cure temperature of the thermosetting resin, thereby eliminating adhesion of the sheet mixture, said step of heating the sheet mixture is after the step of forming the mixture into the sheet.

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34. The method for producing a circuit component built-in module according to claim 26, wherein the step of forming the third sheet by burying the circuit component in the second sheet is performed at a temperature below a cure temperature of the thermosetting resin.

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35. The method for producing a circuit component built-in module according to claim 26, wherein the step of mounting the circuit component on the wiring pattern comprises a step of electrically and mechanically connecting the circuit component and the wiring pattern with solder.

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36. The method for producing a circuit component built-in module according to claim 27, wherein the step of mounting the active component on the wiring pattern comprises a step of electrically connecting a gold bump of the active component and the wiring pattern with a conductive adhesive.